

Holistic Network Design in Scotland

October 2022



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Holistic Network Design

- A first of its kind, integrated approach for connecting 23GW of offshore wind to Great Britain with over 11GW of it in Scotland
- To be delivered by 2030 and cost £32bn
- Covers onshore and offshore electricity network design
- The recommended design in the HND has equally considered four different objectives to make sure the most appropriate approach is taken forwards, including:
 1. Cost to consumer
 2. Deliverability and operability
 3. Impact on environment
 4. Impact on local communities



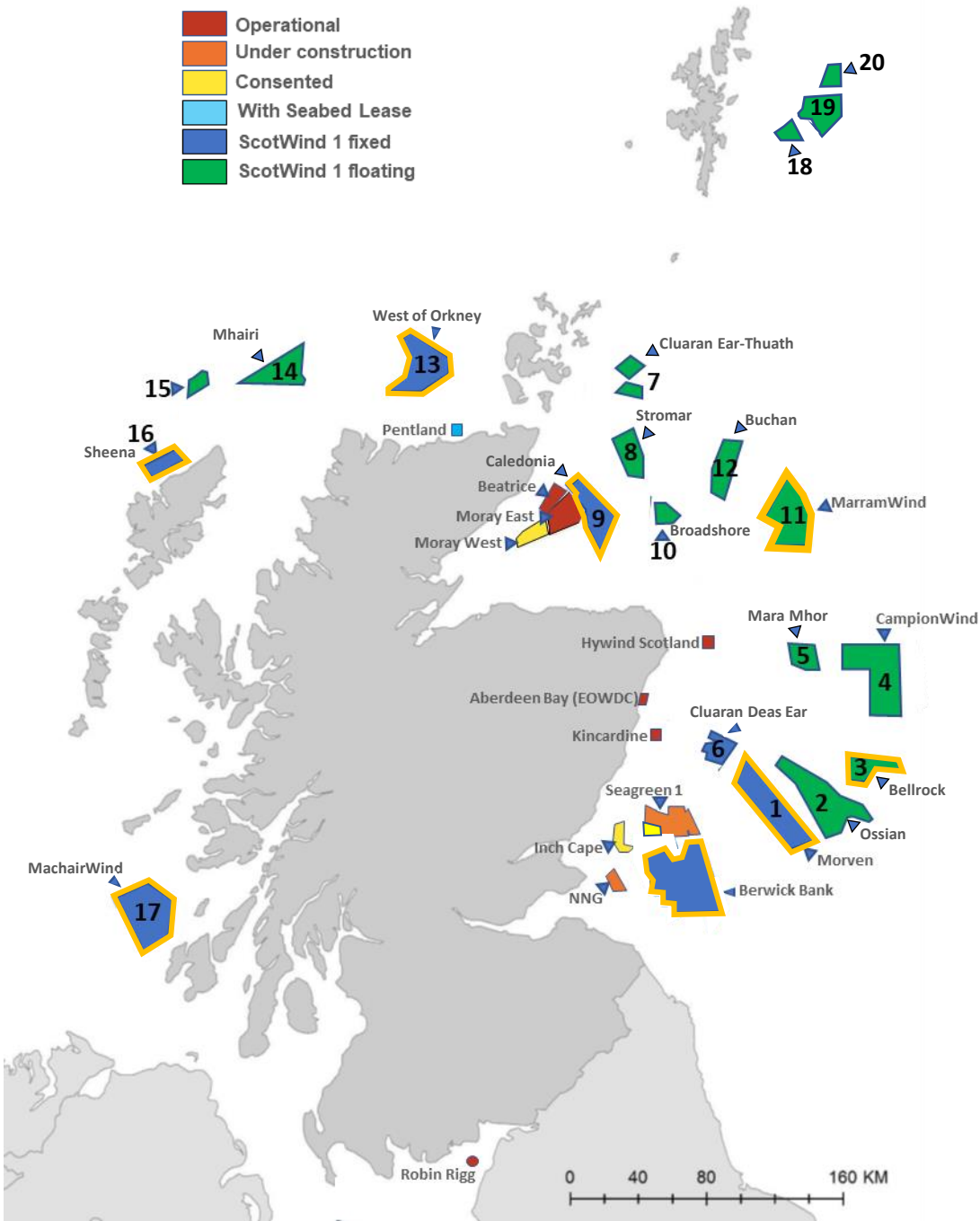
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Scottish projects included for 2030 target
Not all have the full capacity of their site included for connection by 2030

SITE	DEVELOPERS	CAPACITY
1	BP and EnBW	1,500MW
3	Falck Renewables and BlueFloat Energy	1,200MW
9	Ocean Winds	1,500MW
11	ScottishPower Renewables and Shell	1,500MW
13	RIDG, Corio Generation and TotalEnergies	2,250MW
16	Northland Power	740MW
17	ScottishPower Renewables	2,000MW
PA-2	SSE Renewables (Berwick Bank)	1,800MW
	Total	12,490MW

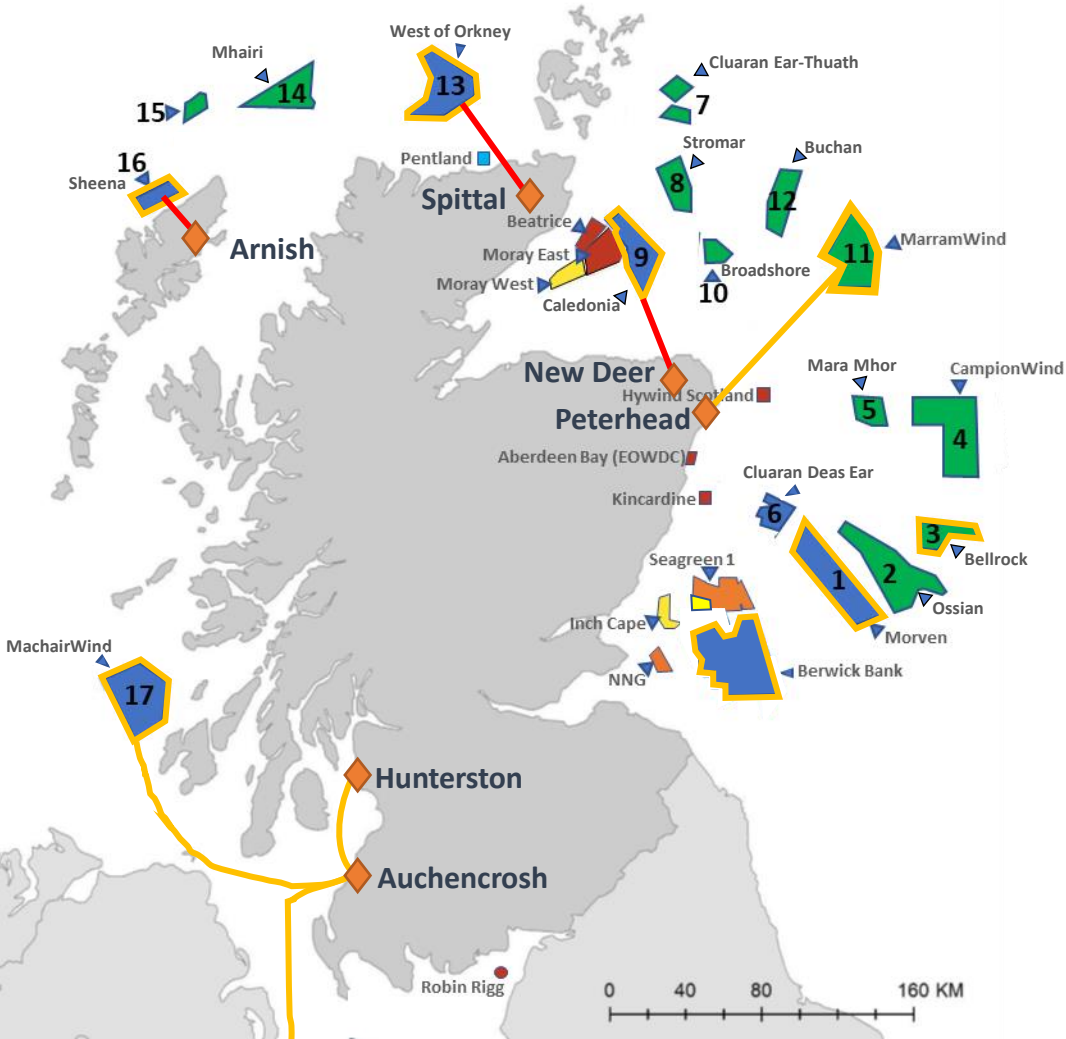
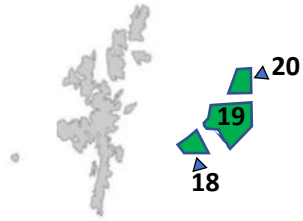
This means that Bellrock and MarrumWind will be the first large scale grid connected floating wind projects in Scotland. They will require approximately 150 substructures in total

- Operational
- Under construction
- Consented
- With Seabed Lease
- ScotWind 1 fixed
- ScotWind 1 floating



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Components of the offshore network design

- Onshore Substations
 1. Spital
 2. Arnish
 3. New Deer
 4. Peterhead
 5. Auchencrosh
 6. Hunterston

- Wind Farm Cables
 1. 16 to Arnish - HVAC
 2. West of Orkney to Spital – HVAC
 3. Caledonia to New Deer – HVAC
 4. MarrumWind to Peterhead – HVDC
 5. MachairWind to Auchencrosh – HVDC

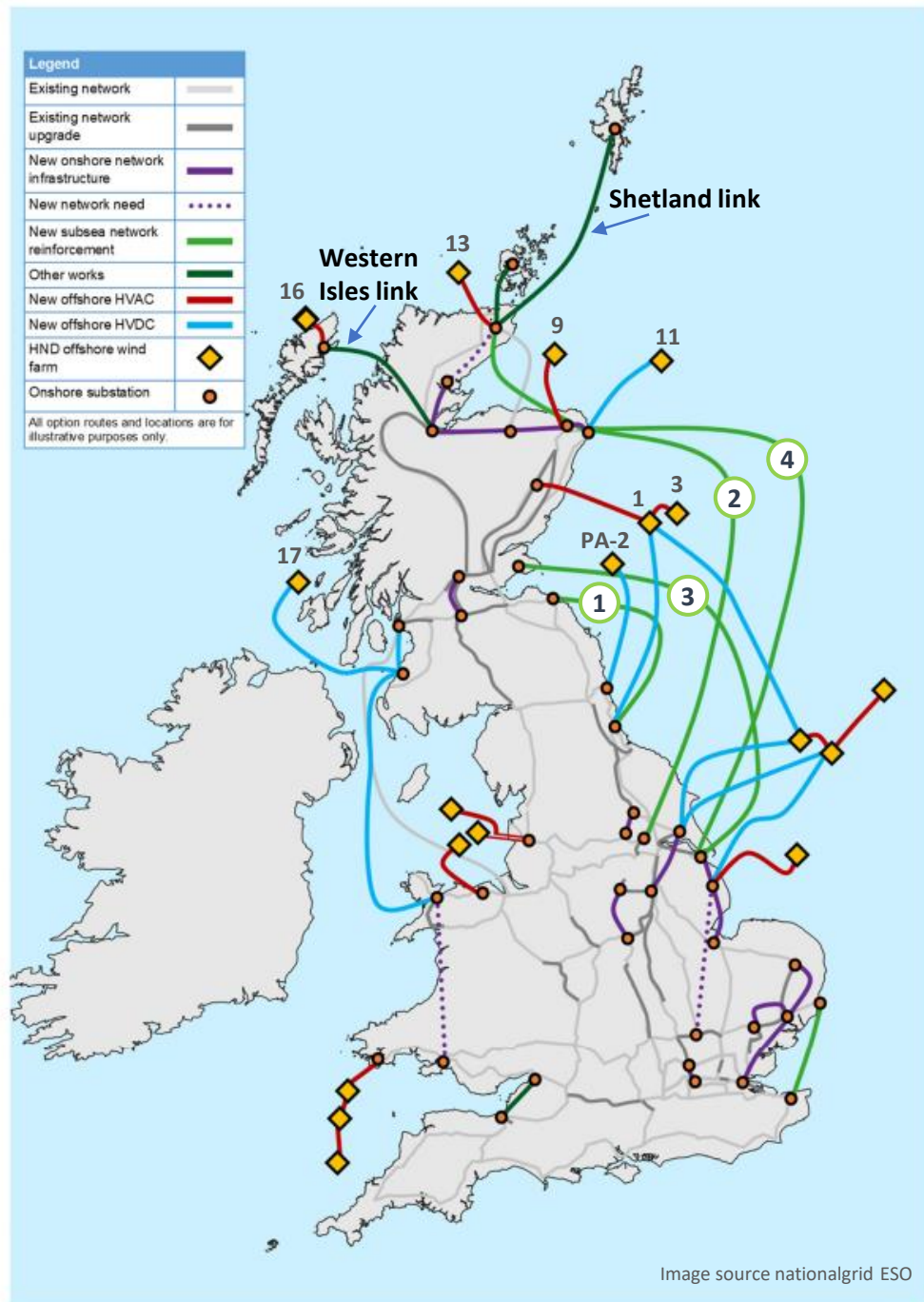


Image source nationalgrid ESO

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- Scotland-England Eastern subsea links
 1. Eastern Green Link 1 – Braxton to Hawthorn Pit (170km)
 2. Eastern Green Link 2 – Peterhead to Drax (455km)
 3. Eastern Green Link 3 – Fife to South Humber (395km)
 4. Eastern Green Link 4 – Peterhead to South Humber (480km)

Overall cost estimate is £6.5bn-£8.5bn. These links will help speed up the delivery of ScotWind projects

Next Steps



- Detailed Network Design (DND) to deliver the 23GW by 2030 with the consenting process that will develop the HND recommendations further to determine technology choices, transmission routes, and the locations of substations and converter stations
- The new Holistic Network Design to deliver the rest of the ScotWind projects is already underway and should deliver its recommendations by end of Q1 2023
- The July 2022 HND document has also flagged that not all the associated capacity in Scotland, i.e. 12.5GW, will be delivered by 2030 but said it was too early to refine this further due to the interdependency of many of the upgrades.

Thank you

